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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/081,915	02/22/2002	Fernando Gonzalez	MCRO:125--4/FLE 94-0281.0	4617

7590 09/05/2003

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EXAMINER

PERALTA, GINETTE

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 09/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/081,915

Applicant(s)

GONZALEZ ET AL.

Examiner

Ginette Peralta

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) 19,20,35,36,40-49 and 53-60 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 19,20,35,36,40-49 and 53-60 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of claims 19, 20, 35, 36, 40-49, and 53-60 in Paper No. 7 is acknowledged.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 19, 35, 36, and 40-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sandhu et al. (U. S. Pat. 5,837,564) in view of Ikeda et al. (U. S. Pat. 5,731,219).

Sandhu et al. discloses a method for making a memory device that comprises providing a substrate 10 having a first conductive line 30 therein; forming a plurality of memory cells 90, each said memory cell comprising an element programmable to multiple states of resistance; forming a second conductive line 100, the second conductive line 100 in electrical communication with one of the memory cells 90.

Sandhu et al. discloses the claimed invention with the exception of creating a third conductive line in electrical communication with the first conductive line and the plurality of memory cells.

Ikeda et al. discloses in figs. 9, and 26-32, a method for making a memory device that comprises providing a substrate having a first conductive line 13 therein; forming a plurality of memory cells; forming a second conductive line 29, the second conductive line 29 in electrical communication with one of the memory cells; and creating a third conductive line 33 in electrical communication with the first conductive line and the plurality of memory cells, wherein the third conductive line 33 is created for the well known and disclosed intended purpose of connecting the memory cells to other areas of the circuit.

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to form a third conductive line in electrical communication with the first conductive line and the memory cells for the well known and disclosed intended purpose of connecting the memory cells to other areas of the circuit.

Sandhu et al. as modified by Ikeda et al. further discloses forming a plurality of contacts between the first conductive line 13 and the third conductive line 33, a respective one of the plurality of contacts being formed between respective pairs of memory cells, and forming each contact from a doped semiconductive region of the substrate.

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Sandhu et al. further discloses forming a first titanium layer 55 over the first conductive line 30.

Regarding the limitation that the method comprises forming each of the memory cells to have a width approximately equal to a minimum photolithographic limit and being spaced apart by a distance approximately equal to the minimum photolithographic limit, it would have been an obvious matter of design choice to form the memory cells having a width approximately equal to a minimum photolithographic limit, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955).

Sandhu et al. further teaches forming dielectric spacers 95 between each pair of memory cells, and Sandhu et al. as modified by Ikeda et al. above, discloses forming dielectric spacers 15 between each pair of memory cells and forming each contact between the respective dielectric spacers, and forming the third conductive line through tapered holes extending through the dielectric material to the contacts.

Sandhu et al. further comprises disposing dielectric material on each of the plurality of memory cells.

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4. Claims 20, 48, 49, and 53-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sandhu et al. (U. S. Pat. 5,837,564) in view of Gonzalez et al. (U. S. Pat. 5,150,276).

Sandhu et al. discloses a method for forming a memory array that comprises providing a substrate 10 having a first conductive line 30 therein; forming a plurality of memory cells 90, each said memory cell comprising an element programmable to multiple states of resistance; forming a plurality of second conductive lines 100, the second conductive lines 100 overlying and in electrical communication with a selected one of the memory cells.

Sandhu et al. discloses the claimed invention with the exception of the first conductive line being a digit line, forming a contact plug in an opening in the dielectric layer, and forming a conductive line in a second conductive layer, the conductive line being in electrical communication with the contact plug.

Gonzalez et al. discloses in Fig. 15 and in cols. 5 to 9, a method of making a memory array, that includes forming a contact plug 175 in an insulating layer 40 wherein the memory cells are formed, forming a plurality of first conductive lines 130 disposed with one of the first conductive lines overlying and in electrical communication with a selected one of the memory cells; and forming a second conductive line 190 in a second conductive layer, the second conductive line 190 in electrical communication with the contact plug 175, wherein Gonzalez et al. further teaches that it is well known in the art the placing of the word lines

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and digit lines beneath the capacitive layers (col. 2, ll. 3-21), and wherein a plurality of contact plugs are formed in the insulating layer between respective pair of memory cells, and conductive lines are formed in electrical communication with the contact plugs for the disclosed intended purpose of providing electrical communication between the contact plugs and the peripheral contacts of the cell array.

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to form a digit line in the substrate in a multilevel structure in order to interconnect various levels of the array and to form a contact plug and a conductive line in electrical communication with the contact plug in order to provide electrical communication between the contact plug, and therefore the memory cells, and the peripheral contacts of the cell array.

Sandhu et al. further discloses forming a first titanium layer 55 over the first conductive line 30.

Regarding the limitation that the method comprises forming each of the memory cells to have a width approximately equal to a minimum photolithographic limit and being spaced apart by a distance approximately equal to the minimum photolithographic limit, it would have been an obvious matter of design choice to form the memory cells having a width approximately equal to a minimum photolithographic limit, since such a modification would have involved a mere change in the size of a component. A change in size is

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generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955).

Sandhu et al. further teaches forming dielectric spacers 95 between each pair of memory cells, and Sandhu et al. as modified by Gonzalez et al. above, discloses forming dielectric spacers between each pair of memory cells and forming each contact between the respective dielectric spacers, and forming the third conductive line through tapered holes extending through the dielectric material to the contacts.

Sandhu et al. further comprises disposing dielectric material on each of the plurality of memory cells.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ginette Peralta whose telephone number is (703)305-7722. The examiner can normally be reached on Monday to Friday 8:00 AM- 5:30 PM.

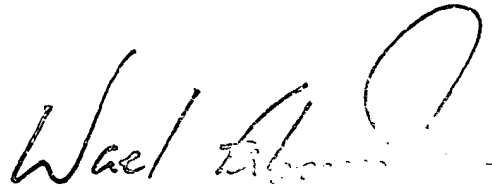
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (703)308-4918. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.



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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

GP



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